

Toolbox of Street Treatments

CTA and CDOT are jointly developing a toolbox of street treatments to make buses faster, more reliable, more comfortable to wait for, and easier to access. The toolbox includes treatments like enhanced bus stops, dedicated bus lanes, improved traffic signals, and more.




The list of possible street treatments included here are the primary tools that CTA and CDOT may consider for future bus priority improvements. Many of the tools can and should be used in combination with others to increase their effectiveness. Each one has important considerations and trade offs that would be evaluated in the context of specific locations.

The Better Streets for Buses Plan will not assign specific street treatments to specific corridors or locations. Decisions as to what tools to use on different corridors will be informed by feedback gathered as part of the Better Streets for Buses public outreach, as well as data analysis and assessment of feasibility. Additional public and stakeholder engagement to vet any proposed designs would take place as part of a future planning phase, before any changes that would significantly affect the use of the street would be implemented. Analysis may also result in additional solutions not featured in the toolbox, especially as technology and street design innovation continue to evolve.

How was the toolbox developed?

- Reviewing other cities' planning programs and guidance from the National Association of City Transportation Officials.
- Testing and evaluating the success of pilot projects.
- Gathering feedback from the public and stakeholders as part of other projects.

CTA and CDOT have identified 21 tools, grouped into three toolbox sections:

-  Bus Stop Treatments
-  Bus-Friendly Streets
-  Bus-Friendly Intersections



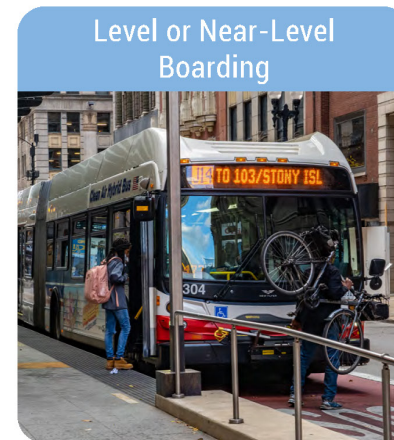
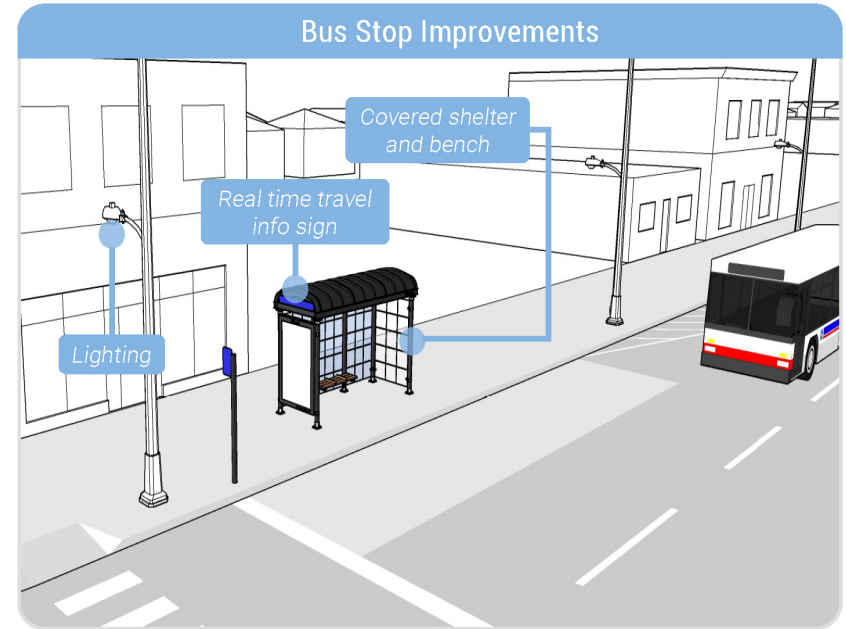
Connect With Us!

Once you've reviewed the Toolbox of Street Treatments, share your thoughts, questions or suggest additional ideas through our interactive website: **betterstreetsforbuses.com**.



What tools can help improve the experience at the bus stop?

- **Accessible Pedestrian Facilities:** A designated paved area in good condition for wheelchair access makes the bus a more viable option for riders with limited mobility.
- **Add or Improve Nearby Sidewalks and Crosswalks:** Bus stops are safer and more accessible when they connect to safe and accessible pedestrian networks, including sidewalks, well-marked crosswalks and curb ramps. Coordination of bus stop locations with opportunities to provide safe and comfortable crossings is also important.
- **Reduce Conflicts with Driveways:** Buses and motorists will encounter fewer conflicts when underutilized or duplicative driveways near bus stops are consolidated or removed. This can make the bus stop more accessible and safer for pedestrians.
- **Bus Stop Improvements:** Overhead shelter, seating, lighting and signs that track the arrival time of the next bus improve the overall bus stop experience.
- **Level or Near-Level Boarding:** Raising the height of the sidewalk and curb at a bus stop can make boarding easier because passengers do not have to step up or down as much as they would at a typical bus stop in order to get on and off. This can also improve boarding with a stroller or walker.
- **Bicycle Parking:** Providing space for people to lock their bicycles helps to expand access and provide people with options for traveling to a bus route or stop.



Bus Stop Treatments

Why are bus stop treatments important?

- Safer and more comfortable experiences getting to and from bus stops, waiting for the bus and boarding the bus make it a more attractive travel option, and can be especially important for older or disabled riders.
- While all CTA bus vehicles are accessible, sidewalk conditions and other factors can sometimes make for a challenging pathway to get to the bus. The bus stop is only as accessible as the area around it; nearby sidewalks, curb ramps and crosswalks are critical to safe access.
- Safety improvements help achieve Chicago's Vision Zero goal of eliminating fatalities and serious injuries from traffic crashes.
- Easier and faster boarding makes overall travel time faster.

Where are these treatments typically used?

- Improvements to pedestrian connections and facilities are used where problems have been identified; safety improvements are particularly important where crashes have occurred in the past or near higher speed streets.
- Level or near-level boarding is usually targeted at high ridership stops where many riders get on and off the bus, such as transfer points. This can also be particularly helpful in areas where a high number of riders have limited mobility.

What are some of the other considerations?

- Level or near-level boarding usually requires rebuilding the bus stop curb and sidewalk. In addition, sufficient space for an ADA-compliant sloped transition to the higher area is needed.
- Shelters require sidewalk space and electrical connections are required for lighting and bus arrival time signage.
- Consolidating driveways is not always feasible, especially if this would limit sufficient access to the property.



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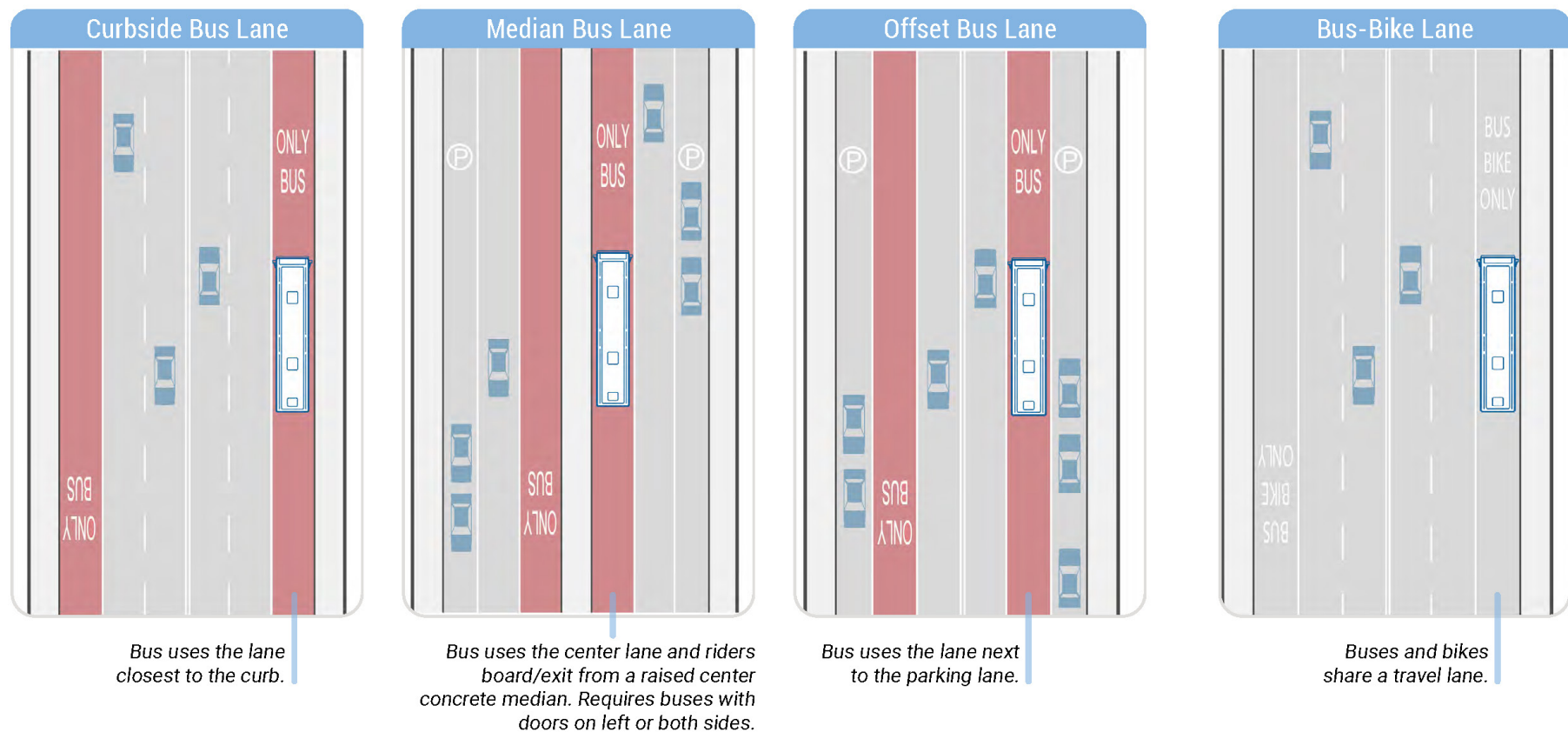




What tools relate to bus-friendly streets?

- **Bus Lane:** This is a travel lane dedicated to bus use. It can be a short or long length of a street, and can be reserved for buses at all times of day or just during specified times, such as rush hour. A bus lane can also be shared with right turn lanes near intersections.
- **Bus-Bike Lane:** This is similar to a bus-only lane, but is shared with people biking. Similar to bus-only lanes, they can be in effect at all times or just during specified times of the day or week, such as rush hour. Generally, bus-bike lanes use the curbside lane.

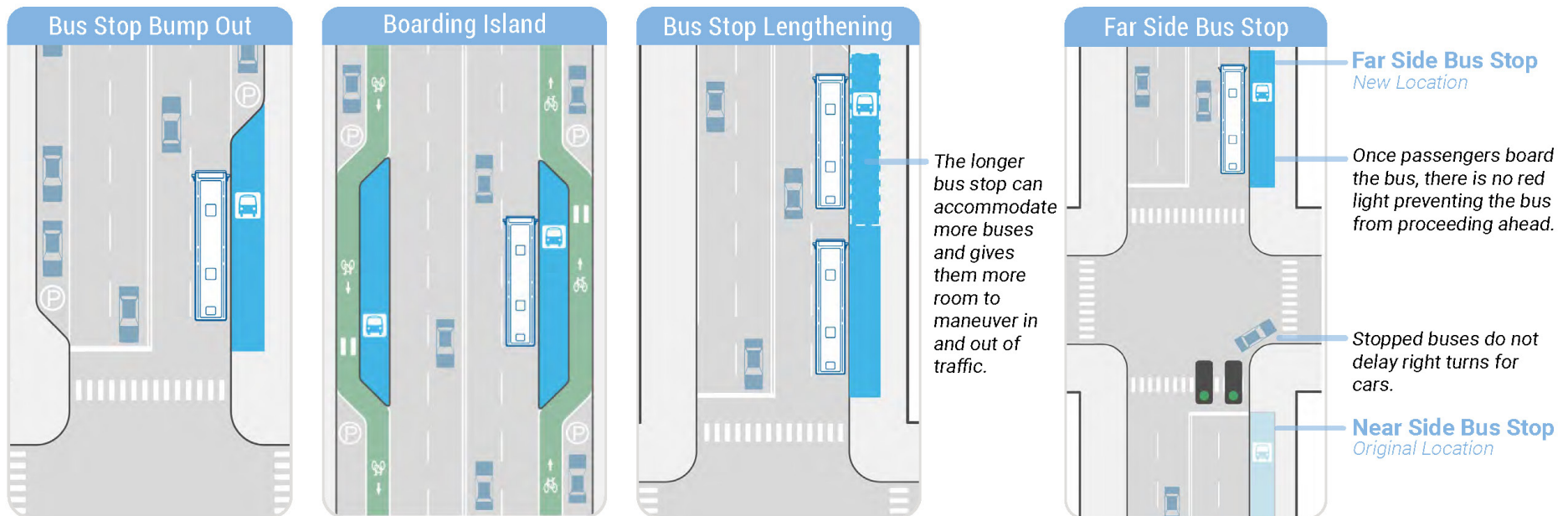
Common Bus Lane Configurations



Bus-Friendly Streets

What other tools relate to bus-friendly streets?

- **Bus Stop Bump Out:** Also called a bus bulb, this tool extends the sidewalk or boarding area into the street, typically aligning with a parking lane, which allows buses to stop in a travel lane and avoid merging out of and back into traffic.
- **Boarding Island:** Raised concrete islands, with vehicle lane(s) on one side and bike lane(s) on the other, direct bike lanes around the bus stop areas, which helps to minimize conflicts and improve safety and comfort for all users.
- **Bus Stop Lengthening:** Longer bus stops provide extra space for a bus to merge into or out of traffic. Some stops also need to be longer because they are served by longer articulated (60 foot "accordion") buses, or multiple bus routes that can arrive at the same time.
- **Far Side Bus Stop:** At intersections with traffic signals, bus stops located on the far side of the intersection can reduce delay because they allow buses to go through an intersection at a green light before stopping to pick up/drop off passengers. Additionally, being far side increases safety for all road users, especially pedestrians, as it prevents vehicles from illegally turning right in front of a stopped bus.
- **Bus Stop Marking:** Bus stops can be clearly marked on the pavement or curb to help alert other vehicles to keep clear.
- **Bus Stop Pad:** Concrete road pads installed in the area where a bus stops are designed to better withstand the weight of buses compared to asphalt. Over time, this helps avoid bumpy pavement, which can impact buses, riders and other road users.



Bus-Friendly Streets

Why are bus-friendly streets important?

- Dedicated lanes for buses help them avoid getting stuck in traffic congestion and help keep other vehicles clear of areas where buses need priority, like bus stops. This helps buses travel faster, stay on schedule and allows for easy boarding—making riding the bus a more reliable and attractive travel option.
- If no bus lane is present, making small adjustments to the street around bus stops can make it easier for the bus to get to the stop and then merge back into traffic, making it smoother and faster to pick up and drop off passengers, which improves overall travel time.
- Bus-friendly stops are passenger-friendly stops too! Tools that create more space for riders to wait for the bus make it easier to board with a stroller or wheelchair, provide for easier street crossings and allow bus riders to avoid conflicts with cars and bikes.
- The location of the bus stop relative to an intersection can improve how buses move through traffic.

Where are bus-friendly street treatments typically used?

- Bus-only lanes are most effective in areas with high levels of traffic congestion. They are usually used on bus routes that run very frequently and have high ridership.
- Best practices for bus-bike lanes are being studied and monitored nationwide. CTA and CDOT will continue to learn from and apply these lessons here in Chicago.
- Tools that make it easier and faster for buses to merge in and out of traffic are most helpful on congested streets, or where access to the curb gets blocked on a regular basis.
- Boarding islands are used in conjunction with bike lanes, to reduce conflicts.
- Bump outs, boarding islands and bus stop lengthening are usually used where there is a parking lane.

Bus Stop Markings



Bus Stop Markings:

Bus stops are usually marked with "Bus Stop" markings on the pavement to indicate that space is reserved for buses.

Boarding Island



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Bus-Friendly Streets

What are some of the other considerations?

- Creating bus lanes usually repurposes some space from another use, such as parking, loading zones, medians or other travel lanes.
- Bus lanes may require some turn restrictions to work well, although in some cases they can also be shared with turn lanes.
- Bus lanes help to visually distinguish the bus and make it clear that the bus has priority over general traffic—both of these factors can increase the appeal of the bus.
- Depending on the width and other uses of the street, implementation of bus lanes may mean that there would be insufficient space available for a dedicated bike facility such as a bike lane. In this case, additional signage or pavement markings to clarify where cyclists should ride may be needed.
- Some tools may improve the experience of other users. For instance, bump outs add sidewalk space for pedestrians and can shorten the length of the crosswalk.
- Bump outs can allow for more street parking compared to typical curbside bus stops.
- Near side bus stops may be better in some contexts than far side stops depending on things like the location of bus or train transfer points, driveways, light poles and landscaping.
- Because buses stay in the travel lane when stopping at a bump out (as opposed to pulling over), this tool may impact other traffic. Bump outs have the least impact on other traffic when used on streets with multiple lanes and not near traffic signals.
- Bus bump outs make it less likely that a bus stop will be blocked by a standing vehicle because the stop area is located in the travel lane.



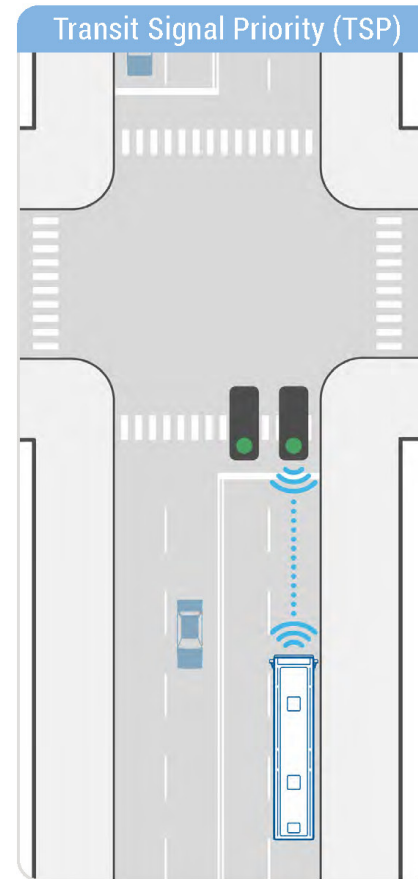
Curbside Bus Lane:
Signs are placed roadside or overhead to communicate curbside uses and lane designations.



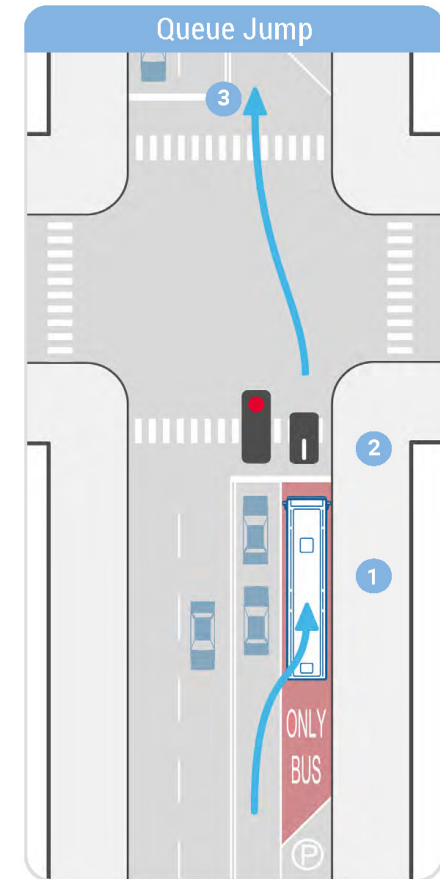


What tools relate to bus-friendly intersections?

- **Convert Stop Sign to Traffic Signal:** In some cases, where warranted, converting a stop sign to a traffic signal can reduce the number of times buses must stop, which improves travel time and makes buses more reliable.
- **Add a Turn Arrow Signal:** At congested intersections where buses need to turn, adding a green arrow to a traffic signal can help buses avoid delays, which makes buses more reliable. A turn signal can benefit other turning traffic as well, and it can improve pedestrian safety. In some instances, it may make sense to install a bus-activated turn signal. This would mean the green arrow would only “turn on” or be lengthened when a bus is present.
- **Traffic Signal Timing:** Synchronizing traffic signals and providing more green time for streets that serve buses allows buses and general traffic to travel through a corridor more efficiently.
- **Transit Signal Priority (TSP):** An approaching bus sends a request to the traffic signal to modify light timing (for example, extending the green light for a few seconds). This tool can be programmed in a number of ways and is often triggered only when buses are behind schedule.
- **Queue Jump:** Bus-only traffic signals give buses an early “go” light to allow buses to jump ahead of waiting traffic at an intersection. These are usually paired with short sections of bus-only lanes on the near side of the intersection, so that buses can get to the “front of the line” before the light changes.



If a bus is behind schedule, it sends a message to the traffic signal to request a several extra seconds of green light time.



1. The bus enters queue jump lane to bypass general traffic.
2. Separate, bus-only signal phase gives the bus a head start at the light.
3. The bus “jumps” ahead of traffic and rejoins general traffic lane.

Bus-Friendly Intersections

Why are bus-friendly intersections important?

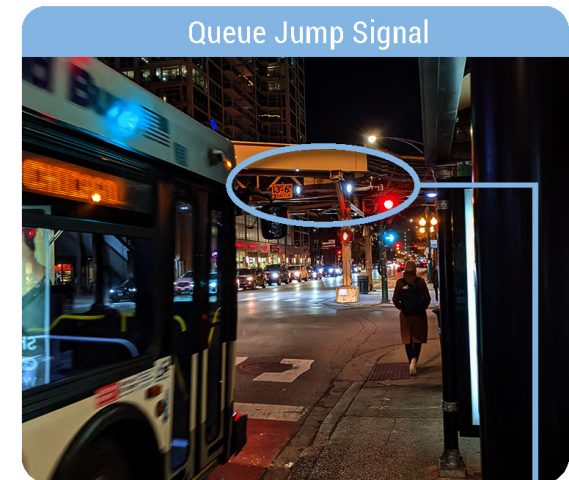
- Buses move faster when they don't have to stop as often and can navigate through intersections easily. Reducing delay at intersections helps keep buses (and their riders) on schedule.

Where are bus-friendly intersection treatments typically used?

- Transit Signal Priority is generally applied to a series of intersections along a roadway, rather than a single intersection.
- Queue jumps are sometimes used at just one intersection and sometimes as a series along a corridor. They are often used when there are near side bus stops in line with a far side parking lane. Queue jump signals can also be paired with right turn signals if a bus lane is shared with right turns for general traffic at intersections.
- Adding or extending turn arrows is most effective at intersections where turns cause significant delays, for instance where turning vehicles cause traffic to back up, or buses needing to turn often end up waiting a long time for traffic to clear.

What are some of the other considerations?

- Adding green light time on one street usually means more red light time for the cross street, which can impact general traffic, as well as other bus routes. Similarly, adding turn arrows to a traffic signal can add time to the total cycle or take away time from other signal phases.
- Traffic signal timing must always provide adequate time for pedestrians, including people with limited mobility, to cross.
- To accommodate a queue jump, a short bus lane is typically needed, which may reduce street parking near the intersection. Generally if there is a bus stop at an intersection where a queue jump is used, the stop should be located on the near side, so that the bus does not need to stop immediately after getting the advantage of the queue jump.



A special signal with a vertical white line tells buses to proceed through the intersection from the queue jump lane.



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